

WHAT IS CLAIMED IS:

1. A digital image processing method for automatic axial rotation correction of in vivo images, comprising the steps of:
 - a) selecting, as a reference image, a first arbitrary in vivo image from a plurality of in vivo images;
 - b) finding a rotation angle between a second arbitrary in vivo image selected from the plurality of in vivo images and the reference image;
 - c) correcting the orientation of the second arbitrary in vivo image, with respect to orientation of the reference image and corresponding to the rotation angle;
 - d) finding the rotation angle between other selected in vivo images and the reference image; and
 - e) correcting for the other selected in vivo images that do not match the reference image's orientation and where there exists a rotation angle between the other selected in vivo images and the reference image.
2. The digital image processing method for automatic axial rotation correction of in vivo images claimed in claim 1, wherein the rotation angle is an accumulated rotation angle from a plurality of rotated in vivo images.
3. The digital image processing method for automatic axial rotation correction of in vivo images claimed in claim 2, wherein the step of correcting the orientation of any arbitrary in vivo image, with respect to orientation of the reference image and corresponding to the rotation angle uses an accumulated correction angle derived from the accumulated rotation angle.
4. The digital image processing method for automatic axial rotation correction of in vivo images claimed in claim 1, wherein the rotation angle is measured with respect to an optical axis of an in vivo camera used to capture the plurality of in vivo images, and wherein the optical axis is

perpendicular to an image plane and is parallel to the in vivo camera's travel trajectory derivative.

5. The digital image processing method for automatic axial rotation correction of in vivo images claimed in claim 1, wherein the rotation angle is defined in a right-hand system or a left-hand system.

6. The digital image processing method for automatic axial rotation correction of in vivo images claimed in claim 5, wherein the rotation angle is rotated counter-clock wise or clockwise relative to the reference image's orientation, such that the rotation angle is a signed value.

7. The digital image processing method for automatic axial rotation correction of in vivo images claimed in claim 1, wherein the plurality of in vivo images have a plurality of feature points, and wherein the plurality of feature points are used for finding an orientation difference between two in vivo images.

8. The digital image processing method for automatic axial rotation correction of in vivo images claimed in claim 7, wherein an origin of a two-dimensional coordinate system of the in vivo images, thus defining an image plane, is at an image's center, and further comprising the steps of:

- a) collecting the plurality of feature points that reside on an axis of a first image plane;
 - b) finding a corresponding plurality of feature points in a second image plane;
 - c) determining whether a feature point that resides on the axis of the first image plane moves off the axis in the second image plane;
- and

d) measuring the feature point's movement off the axis in the second image plane to determine the rotation angle and its direction.

9. A computer storage medium having instructions stored therein for causing a computer to perform the method of claim 1.

10. A computer storage medium having instructions stored therein for causing a computer to perform the method of claim 2.

11. A computer storage medium having instructions stored therein for causing a computer to perform the method of claim 3.

12. A computer storage medium having instructions stored therein for causing a computer to perform the method of claim 4.

13. A computer storage medium having instructions stored therein for causing a computer to perform the method of claim 5.

14. A computer storage medium having instructions stored therein for causing a computer to perform the method of claim 6.

15. A computer storage medium having instructions stored therein for causing a computer to perform the method of claim 7.

16. A computer storage medium having instructions stored therein for causing a computer to perform the method of claim 8.